

WE CLAIM:

1. A ball-valve, comprising:

a housing having an inner spherical cavity with a first port opening into the cavity from a first side of the housing and a second port opening into the cavity from a second opposite side of the housing,

a ball concentrically received in the housing in the cavity for rotation about a first axis through the center of the spherical cavity,

the ball having spherical outer surfaces for sealed engagement within the cavity,

the ball having a blind-bore of a known volume;

the ball adapted to be rotated about the first axis between a first position, in which the blind-bore communicates with the first port, and a second position, in which the blind-bore communicates with the second port;

the sealing engagement between the spherical outer surfaces of the ball and the cavity being maintained during rotation of said ball between the first and second positions whereby rotation of the ball between the first and second positions is adapted to move a predetermined volume from communication with the first port to communication with the second port,

the housing comprising two complementary half members, a first half member carrying the first port and a second first half member carrying the second port, with each half member carrying about one half of the cavity,

the first and second half members coupled together to form the cavity therebetween with a first generally equatorial mating surface on the first half member adapted to removably sealably engage a second generally equatorial mating surface of the second half member,

a biasing mechanism resiliently biasing the first and second half members together to urge the first generally equatorial mating surface into sealed engagement with the second generally equatorial mating surface.

2. A ball-valve as claimed in claim 1 wherein
the housing includes two external bosses, one on each side of the housing,
each boss disposed coaxially about a second axis passing through the center of the
spherical cavity and presenting a circular shoulder surface directed normal a radius from
the axis,
each boss comprising two halves, a first half of each boss comprising part of
the first half member and a second half of each boss comprising part of the second half
member,
the biasing mechanism comprising two resilient circular rings, one ring
mounted on each of the bosses engaging portions of the circular shoulder over both the
first and second halves of its respective boss and by urging the first and second halves of
its respective boss together thereby urging the two half members together.
3. A ball-valve as claimed in claim 1 including an opening into the cavity
coaxial with the first axis via which coupling is made between the ball and a mechanism
external of the ball-valve to rotate the ball about the axis.
4. A ball-valve as claimed in claim 3 wherein the opening having journaling
surfaces coaxial with the axis for journaling of the ball for rotation about the first axis.
5. A ball-valve as claimed in claim 1 wherein the ball includes a spherical core
and two stub axles, one on each side of the core extending outwardly from the core
coaxial to the first axis,
each stub axle having external journaling surfaces coaxial to the first axis,
the housing including two axle bearings, one on each side of the housing
coaxial to the first axis and presenting journaling surfaces coaxial to the first axis
complementary to the external journaling surfaces on the stub axles for engagement
therewith to journal the ball in the housing for rotation about the first axis,

each axle bearing comprising two halves, a first half of each axle bearing comprising part of the first half member and a second half of each axle bearing comprising part of the second half member.

6. A ball-valve as claimed in claim 2 wherein
the ball includes a spherical core and two stub axles, one on each side of the core extending outwardly from the core coaxial to the first axis,
each stub axle having external journaling surfaces coaxial to the first axis,
each boss including a bore opening into the cavity coaxial with the axis and presenting journaling surfaces coaxial to the first axis complementary to the external journaling surfaces on the stub axles for engagement therewith to journal the ball in the housing for rotation about the first axis.
7. A ball-valve as claimed in claim 6 wherein a first of the stub axles has external journaling surfaces of a different radius than a radius of similar external journaling surfaces of a second stub axle.
8. A ball-valve as claimed in claim 7 wherein the surfaces of each boss being circular about the second axis in cross-section.
9. A ball-valve as claimed in claim 1 wherein the cavity having a spherical inner surface, two resilient o-rings each disposed in a respective recess in the spherical inner surface circumferentially about the first axis to a respective side of the first port and the second port to engage the ball and form a seal therewith on rotation of the ball about the axis.
10. A ball-valve as claimed in claim 2 wherein the cavity having a spherical inner surface, two resilient o-rings each disposed in a respective recess in the spherical inner surface circumferentially about the first axis to a respective side of the first port and the

second port to engage the ball and form a seal therewith on rotation of the ball about the axis;

the two resilient o-rings and the two sealing rings being interchangeable.

11. The ball-valve as set forth in claim 1 further comprising a mechanism to rotate the ball between said first and second positions.

12. The ball-valve as set forth in claim 11 wherein said mechanism to rotate the ball includes a slot in said ball adapted to be engaged by a shaft.

13. The ball-valve as set forth in claim 1 wherein said first end communications with a first vessel containing a flowable material, and said second end communications with an outlet;

whereby rotation of said ball from said first to said second positions will move a predetermined amount of said material from said first vessel to said outlet.

14. The ball-valve as set forth in claim 1 wherein said first end communications with a first vessel containing a first flowable material, and said second end communications with a second vessel;

whereby rotation of said ball from said first position to said second position will move a predetermined amount of said material equal to the volume of said blind bore from said first vessel to the second vessel.